

Bull. Natn. Sci. Mus., Tokyo, Ser. A, **25**(3), pp. 215–223, September 22, 1999

Two New Trechine Beetles (Coleoptera, Trechinae) from the Gaoligong Shan Mountains in Yunnan, Southwest China

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Abstract Two new trechine beetles are described from the southern part of the Gaoligong Shan Mountains in western Yunnan, Southwest China. One of them belongs to the genus *Agonotrechus* and is related to *A. birmanicus* (Bates) from Myanmar, while the other is a member of the genus *Trechus* and is widely isolated from its congeners. They are described under the names *Agonotrechus yunnanus* and *Trechus fortipes*, respectively.

Key words: Coleoptera, Trechinae, new species, western Yunnan, Southwest China.

In a previous paper of mine dealing with subalpine trechines from the Gaoligong Shan Mountains that stretch from north to south near the Myanmar borders of western Yunnan, Southwest China (Uéno, 1997), three endemic species of the subfamily were described under the names *Stevensius minutus*, *Trechus* (s. str.) *asetosus* and *T.* (s. str.) *unisetiger*. They are more or less peculiar in their morphological characters, and are considered to have become isolated from their congeners on the higher parts of the mountain range.

Through the courtesy of Mr. Noboru Ito of Osaka, I have recently had an opportunity to examine three specimens of the same subfamily collected from the same locality at the southernmost part of the Gaoligong Shans. A close examination has revealed that they belong to three species of two different genera, *Agonotrechus* and *Trechus*, and though one of them was identified with *Trechus* (s. str.) *macrops* Jeannel widely distributed in the mountainous areas of Southwest China, the other two are doubtless new to science. I am going to describe them in the present paper under the names *Agonotrechus yunnanus* and *Trechus* (s. str.) *fortipes*. The abbreviations used herein are the same as those explained in previous papers of mine.

Before going further, I wish to express my sincere thanks to Mr. Noboru Ito for his kindness in submitting the invaluable specimens to me for taxonomic study.

Agonotrechus yunnanus S. Uéno, sp. nov.

(Figs. 1–3)

Length: 5.35 mm (from apical margin of clypeus to apices of elytra).

Related to *A. birmanicus* (H. W. Bates) (1892, p. 297; Jeannel, 1923, p. 429,

1928, p. 87, figs. 1319–1323), but readily recognized on the presence of two setiferous dorsal pores on the 3rd elytral stria, a little larger head with longer and less oblique genae, less transverse pronotum with broader apex, narrower base and more distinctly marked ante-basal sinuation, and stouter appendages. From *A. wuyipeng* Deuve (1992, p. 172, figs. 2, 13) which is also fully winged and possesses two setiferous dorsal pores on the 3rd elytral stria, this new species differs in the smaller size, obviously smaller and less transverse pronotum with much narrowly reflexed sides, deeper and more coarsely punctate elytral striae, and more outwardly directed apical striole.

A medium-sized species with narrow fore body, ample elytra and stout appendages; surface glabrous on both dorsum and venter; inner wings fully developed. Colour dark brown, partially blackish, and shiny, faintly iridescent on elytra; clypeus, labrum, lateral margins of pronotum and elytra, and epipleura more or less reddish; palpi, antennae and legs reddish brown, though the femora are infuscated.

Head small, transverse, depressed above, widest at about basal three-sevenths, and contracted in front and behind, with large convex eyes and deep entire frontal furrows, the latter of which are not angulate at middle, feebly arcuate in front and widely divergent posteriad; frons and supraorbital areas gently convex, the latter being obliquely strigose at the posterior parts and bearing distinct foveoles at the roots of anterior supraorbital setae; microsculpture consisting of fine transverse or oblique lines partially forming wide meshes, though not so sharply impressed except on vertex; genae short and abruptly contracted posteriad towards sharply marked neck constriction, only a little more than one-fourth as long as eyes; neck relatively narrow; labrum transverse subquadrate, with the apical margin not emarginate but very slightly bisinuate; mandibles fairly slender, not much arcuate, bidentate; mental tooth simple; palpi short though rather slender; antennae fairly stout, only reaching basal third of elytra in ♂, segment 2 the shortest, about three-fourths as long as segment 3 which is about as long as 4 or 5, segments 6–10 gradually decreasing in length towards apex, each cylindrical and more than 2.5 times as long as wide, terminal segment the longest, obviously longer but narrower than scape.

Pronotum relatively narrow, subcordate, wider than head, wider than long in the same proportion, widest at five-eighths from base, and more strongly contracted towards apex than towards base; PW/HW 1.29 [1.33 in a female paralectotype of *A. birmanicus*, 1.34 in a topotypical male of *A. wuyipeng*], PW/PL 1.28 [1.35 in *A. birmanicus*, 1.44 in *A. wuyipeng*], PW/PA 1.55 [1.69 in *A. birmanicus*, 1.68 in *A. wuyipeng*], PW/PB 1.23 [1.15 in *A. birmanicus*, 1.23 in *A. wuyipeng*]; sides equally and rather narrowly bordered except for a brief basal part, moderately arcuate in front, less so behind, briefly but distinctly sinuate at basal eighth, and then slightly divergent again towards hind angles, which are nearly rectangular though directed a little outwards; apex nearly straight, with front angles widely rounded and only slightly advanced; base relatively narrow though still wider than apex, almost straight, PB/PA

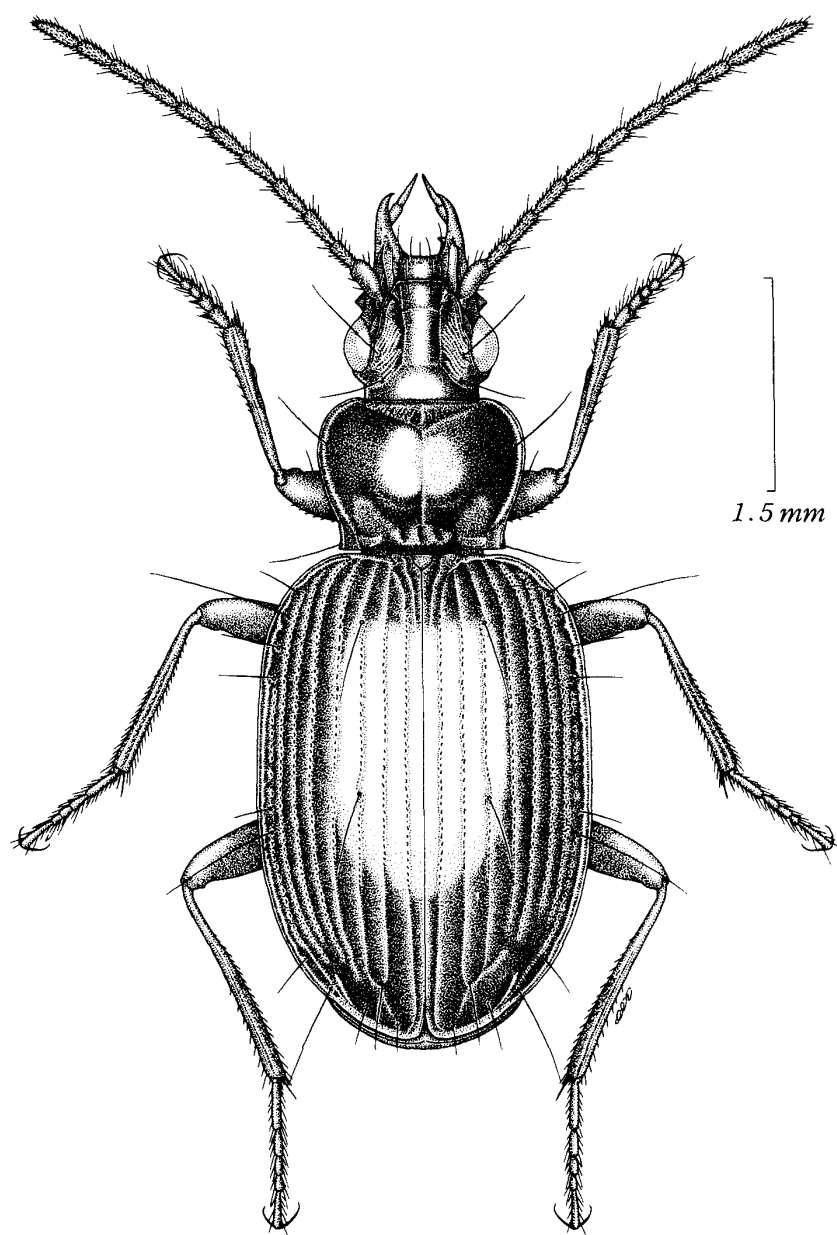
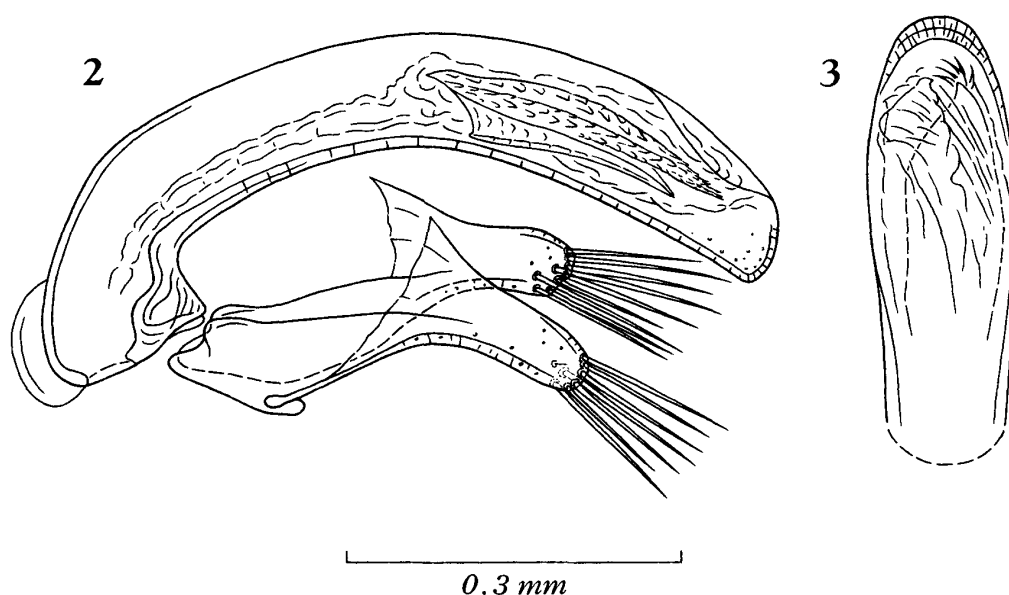


Fig. 1. *Agonotrechus yunnanus* S. Uéno, sp. nov., ♂, from the southern part of the Gaoligong Shan Mountains in western Yunnan.

1.26 [1.47 in *A. birmanicus*, 1.37 in *A. wuyipeng*]; dorsum moderately convex, in particular at the antero-lateral parts, with vague transverse striations; microsculpture mostly formed by fine transverse lines though more or less obliterated; median line fine but distinct, somewhat widened in basal area; apical transverse impression superficial though marked by a series of short longitudinal wrinkles; basal transverse impression mal-defined though continuous, shallowly foveolate on each side of median line; basal foveae fairly large and deep, smooth at the bottom; no postangular



Figs. 2–3. Male genitalia of *Agonotrechus yunnanus* S. Uéno, sp. nov., from the southern part of the Gaoligong Shan Mountains in western Yunnan; left lateral view (2), and apical part of aedeagus, dorso-apical view (3).

carinae.

Elytra ovate, much wider than prothorax, widest at the middle and only slightly narrowed anteriorly before there; EW/PW 1.67 [1.57 in *A. wuyipeng*], EL/PL 3.15 [3.25 in *A. birmanicus*, 3.31 in *A. wuyipeng*], EL/EW 1.47 [1.47 in *A. wuyipeng*]; shoulders rounded together with prehumeral parts; sides moderately bordered, nearly straight behind shoulders, gently arcuate behind middle, and almost conjointly rounded at apices, though forming a small re-entrant angle at suture; dorsum convex though lightly depressed on the disc; microsculpture formed by fine transverse lines; striae nearly entire though more or less obsolete at the apical parts, deeply impressed and rather coarsely punctate, stria 8 not particularly deepened apically; scutellar stria long; apical stria short but deep, hardly arcuate at the anterior portion and free at the anterior end though seemingly directed to stria 7; intervals feebly convex, apical carina prominent; stria 3 with two setiferous dorsal pores at about 2/5 and 4/9 from base, respectively; preapical pore located at the apical anastomosis of striae 2 and 3 behind the level of the terminus of apical stria, and almost equally distant from apex and from suture; marginal umbilicate pores regular.

Ventral surface smooth. Legs relatively short; protibiae straight, gradually dilated towards apices; tarsi fairly stout, tarsomere 1 a little longer than 2–3 together but shorter than 2–4 together in both meso- and metatarsi; in ♂, two proximal protarsomeres moderately dilated and inwardly denticulate at the apices.

Male genital organ very small and lightly sclerotized. Aedeagus only one-fifth as long as elytra, slender, moderately arcuate, with the apical part somewhat dilated

in both lateral and dorsal views; basal part small, rather abruptly curved ventrad, with small basal orifice whose sides are not emarginate; sagittal aileron elongate though hyaline; apical lobe very short, widely rounded in dorsal view, dorsally rounded and blunt at the ventral corner in lateral view; ventral margin widely emarginate in profile in proximal three-fifths but nearly straight in apical part. Inner sac armed with a large elongate copulatory piece but devoid of teeth-patches; copulatory piece about one-third as long as aedeagus, spatulate or rather longitudinally rolled, and largely covered with scales and minute teeth, with the apical part split and acuminate. Styles large with very broad and ventrally curved apical parts, left style longer than the right and bearing seven apical setae in the holotype, while the latter bears nine apical setae.

Female unknown.

Type specimen. Holotype: ♂, "YUNNAN 2200–2500 m / 24.57N 98.45E 8–16/5 / GAOLIGONG mts. / O. Semela leg. 1995". Deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Notes. Judging from the latitude and longitude given on the label, the type locality of this new species seems to be somewhere near the pass of the route from Bawan to Shang'ying, which lies near the lower edge of the *Rhododendron* zone. I had an opportunity to visit this pass on October 10, 1996, and to make a brief collecting in the thickets of rhododendrons and bamboos, but the time allowed was so short that I was unable to find out any trechines there.

Agonotrechus yunnanus occupies a taxonomic position between *A. birmanicus* and *A. wuyipeng* (correctly *wuyiping* though emendation cannot be made), and seems closer to the former than to the latter in view of the similarity in aedeagal configuration. It is, however, identical with the latter in the elytral chaetotaxy, that is, the 3rd elytral stria bears two setiferous dorsal pores instead of one. Since only one specimen each of the three species under consideration is available for the present study, it is impossible to determine variability in their chaetotaxy. To obtain ampler material is therefore indispensable for drawing a satisfactory conclusion regarding their true relationships.

As was noticed in a previous paper of mine (Uéno, 1998 a, p. 64), the number of the parameral setae is subject to considerable individual variation in certain members of *Agonotrechus*. In the holotype of *A. yunnanus*, however, the number attains to a maximum and the supernumerary may be regarded as a specific peculiarity, since it is accompanied with an unusual modification of the parameral apical parts. It is to be hoped that parameral configuration will be scrutinized on a longer series of *A. yunnanus* for proving its taxonomic value.

***Trechus* (s. str.) *fortipes* S. Uéno, sp. nov.**

(Figs. 4–6)

Length: 4.30 mm (from apical margin of clypeus to apices of elytra).

An isolated species resembling certain *Epaphiopsis* in general appearance and in the presence of premolar tooth on the right mandible, but probably related to the *imaicus* lineage of *Trechus*. Readily recognized within that lineage on the fairly elongate facies with stout appendages, and above all on the unique configuration of the aedeagal apical lobe.

Relatively large species of rather elongate facies; apterous. Colour dark reddish brown, shiny, infuscated on head, pronotal disc and each elytron whose margins including interval 1 are reddish; palpi, antennae, venter of hind body, and legs brown, more or less lighter than the other parts of body.

Head small, transverse and lightly depressed above, with deep frontal furrows subangulate at middle and widely divergent in front and behind; frons and supraorbital areas gently convex, the latter bearing foveoles at the roots of anterior supraorbital setae; microsculpture sharply impressed, mostly consisting of wide meshes; eyes only feebly convex, much longer than genae, which are convex and only one-third as long as eyes; neck very wide, with the anterior constriction deeply marked at the sides; labrum transverse, widely emarginate at the apex; mandibles short and stout, right mandible tridentate, with a distinct premolar tooth; mental tooth small and simple; palpi short and stout, penultimate segment of maxillary palpus widely dilated towards apex and surmounted by elongated subconical apical segment; antennae short and stout, reaching basal three-tenths of elytra, segment 2 the shortest, about three-fourths as long as segment 3 and slightly shorter than segment 10, segment 4 about as long as segment 5 and slightly shorter than segment 3, segments 6–10 gradually decreasing in length towards apex, each twice or more as long as wide, terminal segment the longest though narrower than scape.

Pronotum transverse barrel-shaped, much wider than head, widest at three-fifths from base, and more strongly contracted at apex than at base; PW/HW 1.40, PW/PL 1.26, PW/PA 1.59, PW/PB 1.30; sides narrowly bordered in front, more widely so behind middle, widely and moderately arcuate in front, less so in basal two-fifths, and briefly and very slightly sinuate just before hind angles, which are obtuse but denticulate; apex very slightly arcuate, evidently narrower than base, PB/PA 1.22, with front angles almost rounded off; base slightly arcuate at middle and somewhat oblique on each side inside hind angle; dorsum convex, with fine median line which is somewhat widened in basal area; microsculpture formed by fine transverse lines and meshes, though largely obliterated; apical transverse impression shallow, somewhat uneven; basal transverse impression mal-defined, interrupted at middle and longitudinally foveolate on each side of median line; basal foveae large, obliquely extending anteriorad, and uneven at the bottom; postangular carina short and very obtuse; basal area narrow, longitudinally strigose.

Elytra oblong-ovate, much wider than prothorax, longer than wide in a similar proportion, widest just before the middle, and more gradually narrowed towards bases than towards apices; EW/PW 1.47, EL/PL 2.66, EL/EW 1.43; shoulders nar-

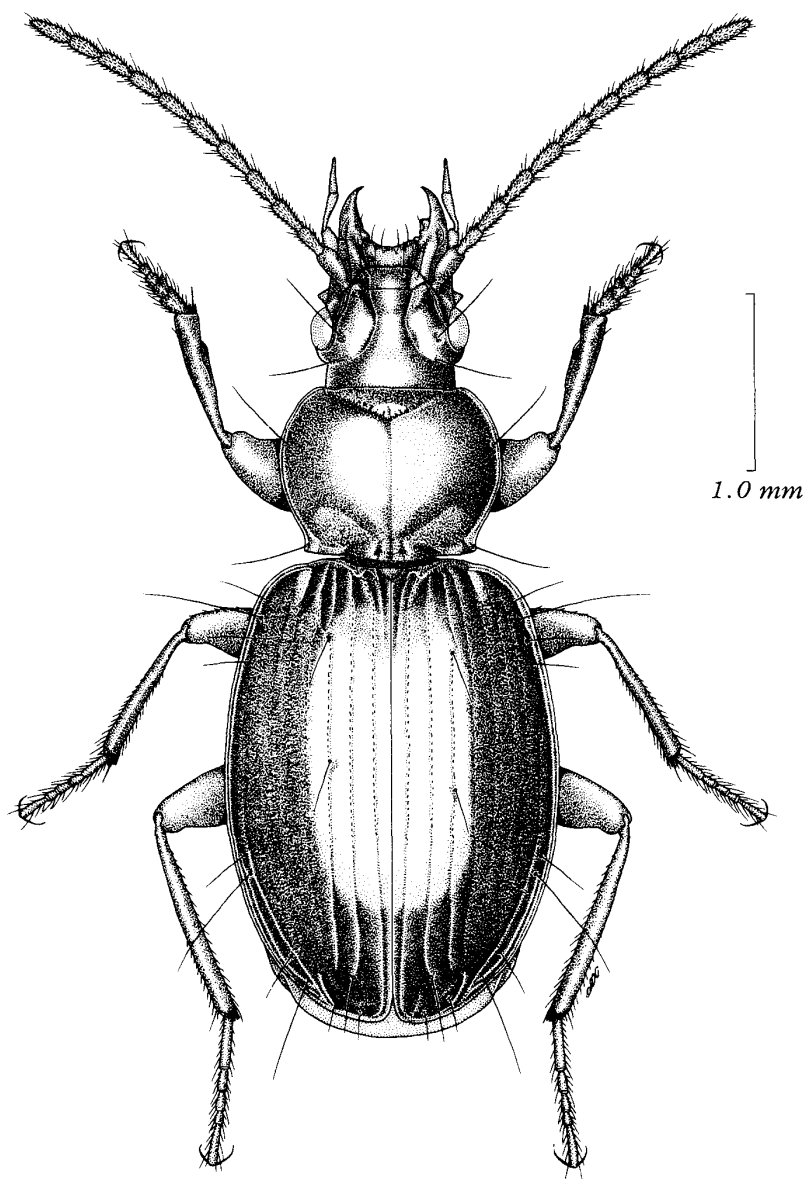
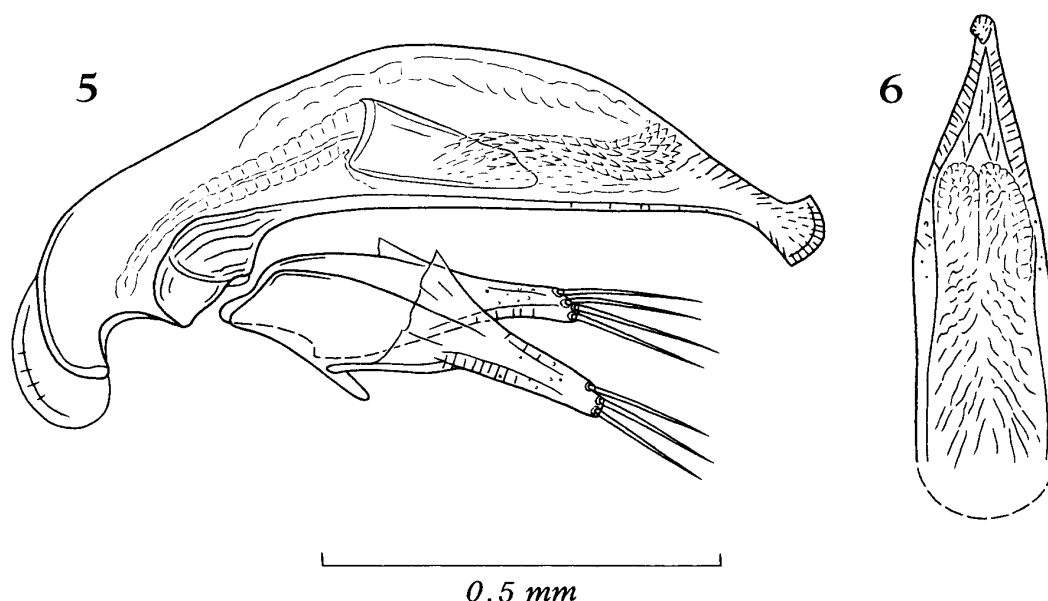


Fig. 4. *Trechus* (s. str.) *fortipes* S. Uéno, sp. nov., ♂, from the southern part of the Gaoligong Shan Mountains in western Yunnan.

rowly rounded, with prehumeral borders almost perpendicular to the mid-line; sides narrowly bordered throughout, feebly arcuate behind shoulders, gently so behind middle, and widely, almost conjointly rounded at apices, which form a small re-entrant angle at suture, preapical emargination very slight; dorsum convex though longitudinally depressed along suture; microsculpture formed by fine transverse lines though mostly evanescent; striae almost entire, rather deeply impressed and distinctly crenulate on the disc but becoming much shallower at the side, stria 5 deepened at the basal portion, striae 6, 7 and proximal part of 8 slight though still clearly perceptible,



Figs. 5–6. Male genitalia of *Trechus* (s. str.) *fortipes* S. Uéno, sp. nov., from the southern part of the Gaoligong Shan Mountains in western Yunnan; left lateral view (5), and apical part of aedeagus, dorso-apical view (6).

8 deeply impressed behind the middle set of marginal umbilicate pores; scutellar striole sharply impressed, fairly long; apical striole short but deep, gently curved, free at the anterior end though directed to stria 5; intervals mostly flat though gently convex near suture; apical carina obtuse; stria 3 with two setiferous dorsal pores at about $1/6$ and $3/7-1/2$ from base, respectively; preapical pore located at the apical anastomosis of striae 2 and 3, and almost equally distant from apex and suture; marginal umbilicate pores regular.

Ventral surface smooth, abdominal setae normal. Legs stout, with thick femora; protibiae widely dilated towards apices and slightly arcuate, each with a fine groove on the external face; tarsi thick, tarsomere 1 longer than tarsomeres 2–3 together but shorter than 2–4 together in both meso- and metatarsi; in ♂, two proximal protarsomeres widely dilated and stoutly produced inwards at the apices.

Male genital organ fairly large though rather lightly sclerotized. Aedeagus about three-eighths as long as elytra, elongate, lightly compressed, and longitudinally membranous on dorsum, with the dorsal margin widely arcuate at middle in profile; basal part elongate, only gently curved ventrad, and deeply emarginate at the sides of rather small basal orifice; sagittal aileron large and elongate; viewed laterally, apical lobe long and thick, gradually narrowed apicad, slightly curved ventrad, and dilated into a large fan-shaped lamella at the extremity; viewed dorsally, apical lobe elongated subtriangular and with a blunt extremity; ventral margin nearly straight at middle in profile. Inner sac armed with a thin copulatory piece at about middle and an elongate teeth-patch extending from the left side of the apical half of copulatory piece to in-

side apical orifice; copulatory piece about two-ninths as long as aedeagus, spatulate and hyaline, with a slight emargination on dorsal margin just before blunt apex; teeth-patch composed of only small sclerotized teeth and scales. Styles relatively small with narrow apical parts, left style longer than the right and bearing only three apical setae in the holotype, while the latter bears four apical setae as usual.

Female unknown.

Type specimen. Holotype: ♂, “YUNNAN 2200–2500 m / 24.57N 98.45E 8–16 / 5 / GAOLIGONG mts. / O. Semela leg. 1995”. Deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Notes. This is a strange species similar to certain *Epaphiopsis* not only in facies but also in the presence of a well developed premolar tooth on the right mandible. However, it lacks setiferous dorsal pores of the external series, and its male genitalia are identical in basic conformation with those of the component species of the lineage of *Trechus imaicus*, with the exception of the peculiar modification of the aedeagal apical lobe. For the time being, therefore, I prefer to regard it as a peculiar offshoot of *Trechus* related to the *imaicus* lineage. Like the other flightless species endemic to the Gaoligong Shan Mountains, this species must have long been isolated on the mountain range which narrowly protrudes into the tropics, and has somehow retained until now the archaic state of the right mandible, which was lost long since in most species of the modern genus *Trechus*. Incidentally, a probable member of the *imaicus* lineage of *Trechus* was recently described from western Sichuan under the name of *T. nomurai* (Uéno, 1998 b, p. 280, figs. 12–14).

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